CURRICULUM VITAE
Michael Maclean Wolf

Sandia National Labs, CSRI/155
P.O. Box 5800, MS 1320
Albuquerque, NM 87185-1320, USA

mmwolf@sandia.gov
(217) 390-3635 (home)
http://www.sandia.gov/~mmwolf/

Research Interests

- High-performance computing, scientific computing, combinatorial algorithms.

Education

- Ph.D., Computer Science, University of Illinois at Urbana-Champaign, 2009.
  Advisor: Professor Michael T. Heath.
- B.S., Computer Science and Biology, Harvey Mudd College, 1998.

Professional Experience

- **Postdoc** (2009-present), Scalable Algorithms Dept., Sandia National Laboratories, Albuquerque, NM. Research into scalable multicore/manycore algorithms, performance of climate modeling software, sparse matrix partitioning and ordering.
- **Graduate Research Assistant** (2007-2009), University of Illinois at Urbana-Champaign Computer Science Department, under the direction of Professor Michael T. Heath.
- **Graduate Professional Intern** (Summers 2007, 2008), CSRI, Sandia National Laboratories, Albuquerque, NM. Developed 2D matrix partitioning algorithms for parallel sparse matrix-vector multiplication.
- **DOE CSGF Intern** (Summer 2004), NERSC, Lawrence Berkeley National Laboratory, Berkeley, CA. Researched and improved performance of parallel matrix-vector multiplication algorithm.
- **Software Developer** (1998-2003), Advanced Computations Dept., SLAC, Stanford, CA. Developed parallel electromagnetic solvers and particle tracking software used in accelerator design.

Selected Papers

- E.G. Boman and M.M. Wolf, "A Nested Dissection Approach to Sparse Matrix Partitioning for Parallel Computations." (submitted paper.)
- M.M. Wolf and M.T. Heath, "Combinatorial Optimization of Matrix-Vector Multiplication in Finite Element Assembly," *SIAM Journal on Scientific Computing*, Volume 31, Issue 4, 2009, pp. 2960-2980.
- M.M. Wolf, E.G. Boman and B. Hendrickson, "Optimizing Parallel Sparse Matrix-Vector Multiplication by Corner Partitioning," PARA08, Trondheim, Norway, May 2008. (submitted paper.)
- A. Skjellum, D. Wooley, Z. Lu, M. Wolf, P. Bangalore, A. Lumsdaine, J. Squyres, and B. McCandless, "Object-Oriented Analysis and Design of the Message Passing Interface," *Concurrency and Computation: Practice and Experience*, Volume 13, Issue 4, 2001, pp. 245-292.
- M. Wolf, A. Guetz, and C.-K. Ng, "Modeling Large Accelerator Structures with the Parallel Field Solver Tau3P," *18th Annual Review of Progress in Applied Computational Electromagnetics: ACES 2002*.
- L.-Q. Lee, L. Ge, M. Kowalski, Z. Li, C.-K. Ng, G. Schussman, M. Wolf, K. Ko, "Solving Large Sparse Linear Systems in End-to-end Accelerator Structure Simulations," *Proceedings of 18th International Parallel and Distributed Processing Symposium*, 2004.

Selected Conference Presentations

- "Improved Data Partitioning by Nested Dissection with Applications to Information Retrieval," SIAM Workshop on Combinatorial Scientific Computing, Seaside, CA, Oct. 29-31, 2009. (Refereed presentation).
- "Hypergraph-Based Combinatorial Optimization of Matrix-Vector Multiplication," 2008 SIAM Annual Meeting, San Diego, CA, July 7-11, 2008. (Minisymposium Talk and **Co-Organizer** MS110.)
- "New Algorithms for Sparse Matrix Partitioning," SIAM Conference on Parallel Processing for Scientific Computing (PP08), Atlanta, GA, 2008. (Contributed Talk.)
- "Using Parallel Mesh Partitioning Strategies to Improve the Performance of Tau3P, an Electromagnetic Solver," SIAM PP04, San Francisco, CA, 2004. (Contributed Talk.)

Selected Honors and Awards

- **Department of Energy Computational Science Graduate Fellowship (CSGF)**, 2003-2007.
- **University of Illinois Fellowship**, 2007-2008.
- SIAM Travel Award, Conference on Parallel Processing for Scientific Computing, 2008.
- Co-author of Best Poster, International Computational Accelerator Physics Conference, 1998.

Service

- **Organizer**, Gene Golub Symposium at UIUC, Urbana, Illinois, February 29 - March 1, 2008.
- SIAM UIUC Student Chapter: **President** (2007-2009), Vice-President (2006-2007).
- Reviewer: *Applied Mathematics and Computation*, *International Journal of High Performance Computing*.